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1 to 1. The results of the investigations are exhibited in several diagrams, which show in a remarkable manner the relations between the chemical and the mineral composition of a large number of rocks.

California. — Massive flows of a rock intermediate in composition between trachytes and andesites are associated with the andesitic tuffs and breccias in the Sonora and Big Trees quadrangles of the Sierra Nevada, California. The rocks, according to Ransome,[1] are characterized by a high percentage of alkalies with potash in excess of soda. The author describes them under the name latite, possessing large phenocrysts of plagioclase and a few anhedra of pale-green augite in a compact aphanitic base. Under the microscope idiomorphic olivines are also discovered. The groundmass is a hyalopilitic aggregate of labradorite, augite, and a globulitic glass, magnetite, and apatite. Biotite phenocrysts are present in some specimens. The fact that the analyses of all specimens show the presence of considerable potash, while at the same time no potash-bearing mineral has been observed in them, suggests that the residual glass is very rich in this oxide. Analyses of the augite-latite from Tuolumne, Table Mt., and of the biotite-augite-latite from near Clover Meadow follow:

	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	H_2O	P_2O_5
Aug.-latite	56.19	.64	16.76	3.05	4.18	3.79	6.53	2.53	4.46	1.00	.55
Biot.-au.-latite	62.33	1.05	17.35	2.98	1.63	1.05	3.23	4.21	4.46	1.19	.29

besides small quantities of MnO, BaO, SO_2, Li_2O, and C.

These rocks are the effusive equivalents of the monzonites. They differ from andesites in possessing a large percentage of the alkalies with potash predominating. They differ from trachytes in containing no sanidine. They are closely related to the vulsinites, ciminites, and other rock types described abroad. The term latite is proposed to include all the effusive forms of monzonite, leaving vulsinite, ciminite, etc., as terms for varietal forms. It is nearly equivalent to Washington's term trachy-dolerite. The dike rocks corresponding to the latites may be the banakites of Iddings.

Nodular Granite, Ontario. — A peculiar occurrence of nodular granite has been found by Adams[2] in the township of Cardiff, Peterborough County, Ontario. The granite is a fine-grained reddish rock banded by streaks of different degrees of coarseness. The nodules are spherical or elliptical, with diameters varying from one to eight inches. Their nuclei are usually lighter in color than their peripheral portions, and contain often little bunches of tourmaline and plates of muscovite. In some places the nodules are arranged in rows. Sometimes the nodules of a row coalesce and pass into a continuous band with all the properties of a vein. Through the veins are scattered bunches of tourmaline, like those in the centers of the nodules; and the central portion of the vein, like the nuclei of the nodules, is composed of feldspar and muscovite. Its periphery, like the peripheries of the nodules, consists principally of quartz and sillimanite. Analyses of the granite (I) and the nodules (II) show the latter to be the more siliceous and the less alkaline.

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[1] *Amer. Journ. of Sci.*, vol. v, p. 355, 1898.

[2] *Bull. Geol. Soc. Amer.*, vol. ix, p. 163.

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	K_2O	Na_2O	Loss	Total
I	78.83	10.88	1.63	.22	.35	5.31	2.13	.32	= 99.67
II	81.43	13.70	1.58	.37	.06	1.28	1.02	.92	= 100.36

From a consideration of the manner of occurrences of the nodules and their composition when compared with the granite, Adams concludes that they were derived from the crystallization of a magma which was free to gather itself into rounded drop-like forms which the isolated portions of such a liquid would take, but which could not be developed in a magma when crystallization was far advanced.

The rock of the Great Whin Sill in Durham and Northumberland has profoundly altered the carboniferous limestones, shales, and sandstones with which it is in contact. Hutchings[1] declares that the pure limestones have simply suffered crystallization except in the immediate contact with the eruptive where garnets have sometimes been produced. The eruptive, on the other hand, has had developed in it both small garnets and small flakes of a brown biotite. Argillaceous limestones have suffered a great deal more change than the purer limestones. The new contact minerals found in them are garnet, augite, idocrase, wollastonite, epidote, hornblende, feldspar, chlorite, and sphene. The shales have become indurated. Chlorite and muscovite have been formed in large quantity and "spots" have developed. In many of the shales, especially sandy varieties, much of the quartz has recrystallized, feldspar has been produced, and the characteristic contact minerals, andalusite, biotite, anthophyllite, etc., have originated. The calcareous shales are the most intensely altered of all the beds in the district. They yield a hornfels filled with garnets, idocrase, spinel, wollastonite, and, in short, all the other minerals characteristic of the altered argillaceous limestones and the shales.

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[1] *Geol. Magazine*, vol. v, pp. 69, 123, 1898.

After discussing a large number of analyses of the altered and the unaltered rocks, the author concludes that it cannot be proved that transfer of soda from the igneous rock to the sedimentary ones has taken place. The paper closes with a protest against ascribing to dynamic-metamorphism many of the effects that may be due to contact action.

Notes. — The "porphyritic gneiss" of New Hampshire, formerly supposed by Hitchcock and others to be a Laurentian metamorphosed sediment, is shown by Daly[1] to be an igneous rock intruded into the surrounding rocks in post-Devonian time. Iwasaki[2] mentions the existence of a diorite dike cutting the Tertiary rocks in the Usui Pass, near Tokio, Japan. It consists of zonal plagioclase, hornblende, quartz, and several accessory and secondary constituents. The author calls it an andendiorite, following Stelzner, who has described a quartz-bearing mica diorite occurring in a "neovolcanic dike" in Argentine.

Two interesting examples of contact action are described by D'Achiardi.[3] The first is between dolomite, on the one hand, and granite and diabase on the other, near Berdiaouch in the Ilmen Mountains, Russia, and the second between limestone and granite on the Isle of Elba. The new minerals produced in the limestones by the contact action are not essentially different from those occurring under similar conditions elsewhere. The development of antigorite, pyroxene, wollastonite, and white mica is especially prominent.

W. S. Bayley.

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[1] *Journ. of Geol.*, vol. v, pp. 694, 776.

[2] *Ib.*, vol. v, p. 821.

[3] Atti della Soc. Tosc. d. Sci. Nat. Pisa. *Memoire*, vol. xvi.